Note on Merlia normani *and the "Monticuliporas."*

By R. Kirkpatrick.

(Communicated by Prof. Arthur Dendy, F.R.S. Received August 15, 1912.)

As a result of my recent investigation—carried on with the aid of a grant from the Royal Society—of *Merlia normani*, Kirkp., a siliceous sponge with a supplementary calcareous skeleton, I find that the sponge owes its exceptional character to the fact of its being infested with a Zooxanthella which passes a resting phase in certain cells of the sponge and a motile phase outside those cells.

All degrees of infection can be seen, from those of sponge cells with only a few monads to stages in which the greatly hypertrophied sponge cells are packed with countless numbers of these organisms.

The monads in the resting condition have a cellulose-like coat, and in both phases a nucleus and an orange-coloured chromatophor. In the resting phase many undergo division into 2, 4, 8 and probably more cells.

When masses of sponge cells loaded with monads are examined alive in sea water in a moist chamber, the monads can be seen escaping from their tests and from the sponge cells and swimming about in the water.

In this stage, in which they possess two flagella, conjugation can sometimes be observed between cells of different sizes.

After a period of activity varying from a few minutes to half an hour the motile cells die; but in place of disintegrating, they become calcified.

Well prepared decalcified sections of Merlia show that the calcareous skeleton is made up of bricks, each consisting of a calcified corpse of one of these monads. Possibly under normal conditions many of the monads on their escape from the sponge cells become calcified, and added on to the skeleton without passing through the flagellate stage. Merlia is a lineal descendant of the Palæozoic Monticuliporas, all of which are siliceous sponges with supplementary skeletons formed of the calcified bodies of monads which had lived commensally in the cells of those sponges. The Monticuliporas proper, also species of Chætetes and Rhaphidopora, all contain siliceous spicules of a kind related to those of Merlia, and, further, the calcareous skeleton is formed on the same plan.

The monticules of Monticulipora are the expression of sporadic outbursts of activity on the part of the monads, whereby an extra supply of bricks is formed. Very frequently, *Merlia normani* is found growing over a Melobesia-like crust, which latter directly encrusts the shell or rock. Even

in Palæozoic Monticuliporas the same relation holds, for in the case of fossils encrusting shells, a thin graphite-like layer of alga is sometimes found between the Monticulipora and the shell.

At present I am not prepared to say to what genus the Zooxanthella monad of Merlia belongs. I propose to name the species "noronhæ" in honour of Senhor A. C. Noronha, who rendered invaluable assistance during the dredging operations off Madeira and Porto Santo Island. The name Merlia is a synonym of Monticulipora, the name of the sponge being *Monticulipora normani*, Kirkp.

A Camel Trypanosome, with some Remarks on the Biometric Method of Diagnosing Trypanosomes.

By Dr. H. L. Duke.

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The trypanosome which forms the subject of the following experiments was kindly forwarded to Mpumu by Mr. E. Montgomery, M.R.C.V.S., from the veterinary pathological laboratory, Nairobi. The organism was originally obtained from the blood of a camel from Boran. Experiments were undertaken to see whether the trypanosome was transmissible by laboratory-bred *G. palpalis*, and a few sub-inoculations were performed.

Morphology.—Length: 400 trypanosomes taken at random were measured, and the results are given in Table I. As is there shown, the length varies between 18 μ and 34 μ.

Shape: The great majority of the trypanosomes seen are slender; a few forms occur which are markedly broader. The flagellar end may be very much drawn out, the kinetic nucleus being sometimes from 4 μ to 4·5 μ from this extremity.

Undulating membrane: Well developed.

Flagellum: In the slides examined, only one single specimen was observed in which there could be any doubt as to the presence of a free flagellum. In the majority, the free portion of the flagellum is very well marked.

Kinetic nucleus: Always clearly discernible; small and round, situated